

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.114, and in light of the remarks which follow, are respectfully requested.

As correctly stated in the Official Action, Claims 1-15 are pending in the present application. Claims 1-15 stand rejected.

By the present amendment, independent Claims 1, 6, and 11 have been amended to recite that the alignment chamber is arranged between the through-chamber and one or more load-lock chambers. Support for this amendment can be found, at least, in Figure 1, of the present application. No new matter has been added.

Interview Summary

Applicant gratefully acknowledges the courtesy shown by Examiners Moore and Hassanzadeh during the personal interview with Applicant's undersigned representatives on April 27, 2004. As the Interview Summary Record indicated that no separate record of the interview by Applicant is necessary, Applicant merely confirms the accuracy of the Interview Summary Record provided by the Examiners.

Rejections Under 35 U.S.C. § 103

Claims 1-12 have been rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 5,738,767, hereinafter Coad, in view of U.S. Patent No. 4,651,674, hereinafter Hayashi and U.S. Patent No. 6,205,870, hereinafter Hosokawa.

The Examiner relies upon Coad as the primary reference teaching a substrate processing device. However, the Examiner acknowledges that Coad does not teach or suggest holding two substrates in such a way that a plate surface thereof forms an angle to the horizontal between 60 and 90 degrees. The Examiner relies upon Hayashi for this teaching. The Examiner further recognizes that Coad fails to teach the horizontal movement mechanism which moves a substrate holder via a through chamber to a plurality of process chambers and an alignment chamber hermetically connected to the through chamber, wherein a substrate holder is in the alignment chamber. The Examiner relies upon Hosokawa for the alleged teaching of the alignment chamber.

Applicant respectfully requests that the Examiner reconsider and withdraw the outstanding rejection. Specifically, the Applicant believes that there is no appropriate motivation to combine the references as alleged by the Examiner, and, even if the references are combined, they do not teach or suggest the present invention.

Specifically, claim 1 recites a substrate processing device that includes, among other things, a through chamber which constitutes a vacuum chamber, and wherein a plurality of vacuum process chambers are hermetically connected to a perimeter of the through chamber. The substrate processing device of claim 1 further includes an alignment chamber hermetically connected to the through chamber. In addition, the carry system of the substrate processing device of claim 1 comprises a substrate holder which holds a substrate upright in such a way that the plate surface thereof forms an angle to the horizontal and between 45 degrees and 90 degrees. Further, the alignment chamber is arranged between the through-chamber and one or more load-lock chambers.

Although both Coad and Hayashi teach substrate carriers wherein the substrates are carried in such a way that a plate surface thereof forms an angle to the horizontal between 60 and 90 degrees, Hosokawa is completely different. As can be seen in Figures 2A and 3, the atmospheric transfer arm 36 of Hosokawa carries the substrates in a horizontal orientation. In addition, the vacuum transfer arm 38 also supports the substrates in a horizontal orientation. Accordingly, Hosokawa is not set up for transferring the substrates in the orientation disclosed and described in claim 1 or in the Coad and Hayashi references. Accordingly, one of ordinary skill in the art seeking to improve the teachings of Coad and Hayashi, at least with respect to substrate transfer, would not be motivated to look to art wherein the substrates are transferred in a horizontal orientation.

Furthermore, the Examiner alleges that it would have been obvious to use the teachings of Hosokawa "in order to controllably position the substrate with high accuracy as taught by Hosokawa". However, the alignment mechanism of Hosokawa is necessary because the substrates are transferred individually and horizontally, i.e., not by a carry system. Accordingly, it is necessary to periodically align the substrates between transfers. Since Coad and Hayashi transfer the substrates on a carry system, an alignment system, such as that disclosed by Hosokawa, would be irrelevant, and in fact could not be configured to work with the Coad or Hayashi vertically orientated carry devices. Additionally, the alignment mechanism of Hayashi is positioned before the load-lock chambers, not between the lock chambers and the through-chamber as in the presently claimed invention. Therefore, even combining this feature of Hosokawa with that of Coad or Hayashi would not result in the presently claimed invention.

Accordingly, there is not only no motivation to combine Hosokawa with Coad or Hayashi, but to do so would involve substantial modification of Coad and Hayashi. In fact, if Coad and Hayashi were modified to the extent necessary to use the alignment technology of Hosokawa, then Coad and Hayashi would no longer be relevant to the present invention. In other words, if so modified, Coad and Hayashi would no longer have a carry system that comprises a substrate holder which holds a substrate upright in such a way that a plate surface thereof forms an angle to the horizontal of between 45 and 90 degrees. Moreover, based on the disclosure of Hosokawa, the alignment chamber would be in a different position than that of the presently claimed invention.

Accordingly, Coad, Hayashi, and Hosokawa cannot be modified as proposed by the Examiner. The Examiner has merely used the claims as a shopping list to search through the prior art to individually pick out elements without regard as to whether or not there is any motivation to select the elements, and, more importantly, whether the elements can be properly combined in a manner that is recognized and accepted by the courts. Applicant submits that the combination proposed by the Examiner fails these tests, and is thus improper with regard to 35 U.S.C. §103.

In addition, the Examiner relies upon Hosokawa for an alleged teaching of an alignment chamber hermetically connected to the through chamber. However, it is quite clear from a reading of Hosokawa, that the atmospheric cassette load station 12, which the Examiner alleges corresponds to the claimed hermetically connected alignment chamber, is not in any way hermetically connected to any other chamber in the Hosokawa device. Specifically, the atmospheric cassette load station 12 is always maintained at atmospheric pressure, and thus is not hermetically sealed to

the load lock chambers 14, 16. Before substrates are transferred from the atmospheric cassette load station 12 to the load lock station 14, or from the load lock station 16 to the atmospheric cassette load station 12, the respective load lock station 14, 16 is pressurized to atmospheric pressure so that the transfer can take place without any hermetic seal between the atmospheric cassette load station 12 and the corresponding load lock chambers 14, 16. Accordingly, there is no teaching or suggestion in any of the cited prior art of an alignment chamber hermetically connected to the through chamber.

Furthermore, any sideways movement of a substrate in the atmospheric cassette load station 12 does not move the substrate in an upright orientation, as required by claim 1.

Accordingly, there are several significant reasons why the combination of Coad, Hayashi and Hosokawa is not only improper, but if sustained, would not teach or suggest claim 1 of the present invention.

Claims 2-5 depend from claim 1, and are thus patentable over the cited prior art at least for the reasons set forth above with respect to claim 1.

Claim 6 is an independent claim that recites a substrate processing device. Claim 6 includes the elements discussed above with regard to claim 1 upon which Applicants are relying upon in order to distinguish the claims from the Examiner's combination of prior art. Accordingly, claim 6, and dependent claims 7-10 are also patentable over the Examiner's combination of prior art at least for the reasons set forth above with respect to claim 1.

Claim 11 defines a through chamber having a perimeter to which a plurality of vacuum processing chambers are hermetically connected. Claim 11 also recites all

of the elements discussed above with respect to claim 1, upon which Applicant is relying in order to distinguish claim 1 over the prior art. Accordingly, claim 11 is also patentable over the Examiner's combination of prior art at least for the reasons set forth above with respect to claim 1.

Claim 12 depends from claim 11, and is thus also patentable over the applied prior art at least for the reasons set forth above with respect to claim 12.

Claims 13-15 have been rejected over the art discussed above, and further in view of U.S. Patent No. 6,451,181, hereinafter Denning. The Examiner relies upon Denning only for its teaching of a heater in the alignment chamber. Accordingly, this does not overcome the deficiency of Coad, Hayashi and Hosokawa that is discussed above. Accordingly, claims 13-15 are also in condition for allowance.

Applicants reserve the right to challenge the Examiner's interpretation of an analysis of the individual prior art references, as well as the right to present additional arguments as to why the combinations may be improper.

In the event that there are any questions concerning this response, or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution of the application may be expedited.

Conclusions

From the foregoing, further and favorable consideration in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at her earliest convenience.

Respectfully submitted,

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